

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the above-identified application.

Listing of Claims

1. **(Currently Amended)** A printed circuit board assembly for high-speed optical format data transmission comprising:
 - a printed circuit board;
 - a plurality of optical components mounted to the printed circuit board;
 - a plurality of electrical components mounted to the printed circuit board; and
 - a heatsink attached to the printed circuit board wherein
 - the heatsink interfaces directly with a plurality of the electrical and optical components, and
 - the printed circuit board includes one or more openings in which one or more of the electrical or optical components are embedded.
2. **(Original)** The printed circuit board assembly of claim 1, further comprising a tray mounted on the printed circuit board for routing optical fiber.
3. **(Canceled)**

4. **(Currently Amended)** A printed circuit board assembly for high-speed optical format data transmission comprising: The printed circuit board assembly of claim 1,

a printed circuit board;

a plurality of optical components mounted to the printed circuit board;

a plurality of electrical components mounted to the printed circuit board; and

a heatsink attached to the printed circuit board wherein

the heatsink interfaces directly with a plurality of the electrical and optical components, and

the heatsink includes one or more openings in which one or more of the electrical or optical components are embedded.

5. (Original) The printed circuit board assembly of claim 4, wherein at least a portion of the perimeter of the openings interfaces with the one or more corresponding electrical or optical components.

6. (Original) The printed circuit board assembly of claim 1, further comprising:

additional compliant heat conductive material between the top of one or more electrical or optical components and the heatsink.

7. **(Canceled)**

8. (Original) The printed circuit board assembly of claim 1, wherein the electrical and optical components for receiving data are positioned on one section of the printed circuit board, and the electrical and optical components for transmitting data are positioned on another section of the printed circuit board.

9. (Original) The printed circuit board assembly of claim 1, wherein the electrical and optical components that are sensitive to temperature variation are positioned near the portion of the printed circuit board that receives the greatest amount of cooling.

10. (Previously Presented) A method for dissipating heat from electrical components and optical components on a printed circuit board, the method comprising:
determining an average height of the electrical components and the optical components with respect to the printed circuit board;
forming openings in the printed circuit board corresponding to at least some of the electrical components and optical components that are significantly higher than the average height;
embedding the at least some of the significantly higher electrical components and optical components in the openings in the printed circuit board; and
attaching a heatsink member to the printed circuit board so that the heatsink member is in direct contact with at least a portion of each electrical and optical component that requires cooling.

11. (Original) The method of claim 10, further comprising mounting a tray on the printed circuit board; and routing optical fiber in the tray.

12. (Original) The method of claim 10, further comprising:
adding heat conductive material between the top of one or more electrical or optical components and the heatsink.

13. (Original) The method of claim 10, further comprising:
removing material from the bottom of one or more portions of the heatsink to accommodate one or more of the electrical or optical components.

14. (Original) The method of claim 10, further comprising:
positioning the electrical and optical components for receiving data on one section of the printed circuit board; and positioning the electrical and optical components for transmitting data on another section of the printed circuit board.

15. (Original) The method of claim 10, further comprising: positioning the electrical and optical components that are sensitive to temperature variation near the portion of the printed circuit board that receives the greatest amount of cooling.

16. (Previously Presented) A method for dissipating heat from electrical components and optical components on a printed circuit board, the method comprising:
determining an average height of the electrical components and the optical components with respect to the printed circuit board;
forming openings in a heatsink corresponding to at least some of the electrical components and optical components that are significantly higher than the average height;
positioning the heatsink over the significantly higher electrical components and optical components on the printed circuit board; and
attaching a heatsink member to the printed circuit board so that the heatsink member is in direct contact with at least a portion of each electrical and optical component that requires cooling.

17. (Original) The method of claim 16, further comprising mounting a tray on the printed circuit board; and routing optical fiber in the tray.

18. (Original) The method of claim 16, further comprising:
adding compliant heat conductive material between the top of one or more electrical or optical components and the heatsink.

19. (Original) The method of claim 16, further comprising:
removing material from the bottom of one or more portions of the heatsink to
accommodate one or more of the electrical or optical components.
20. (Original) The method of claim 16, further comprising: positioning the
electrical and optical components for receiving data on one section of the printed circuit
board; and positioning the electrical and optical components for transmitting data on
another section of the printed circuit board.
21. (Original) The method of claim 16, further comprising: positioning the
electrical and optical components that are sensitive to temperature variation near the
portion of the printed circuit board that receives the greatest amount of cooling.
22. **(Currently Amended)** A device for high-speed optical format data
transmission comprising:
~~circuit board~~ means for mounting electrical components, optical components, and
a heatsink device;
a plurality of optical components mounted to the ~~circuit board~~ means for
mounting;
a plurality of electrical components mounted to the ~~circuit board~~ means for
mounting; wherein
the means for mounting includes one or more openings in which one or
more of the electrical or optical components are embedded, and
~~heatsink~~ means, attached to the ~~circuit board~~ means for mounting, for interfacing
directly with, and dissipating heat from, a plurality of the electrical and
optical components.
23. (Original) The device of claim 22, further comprising means for routing
optical fiber.

24. (Canceled)

25. (Currently Amended) A device for high-speed optical format data transmission comprising: The device of claim 22,
means for mounting electrical components, optical components, and a heatsink device;
a plurality of optical components mounted to the means for mounting;
a plurality of electrical components mounted to the means for mounting; and
means, attached to the means for mounting, for interfacing directly with, and
dissipating heat from, a plurality of the electrical and optical components,
wherein
the ~~heatsink~~ means for interfacing includes one or more openings in which
one or more of the electrical or optical components are positioned.

26. (Original) The device of claim 25, wherein at least a portion of the perimeter of the openings interfaces with the one or more corresponding electrical or optical components.

27. (Currently Amended) The device of claim 22, further comprising:
additional compliant heat conductive material between the top of one or more
electrical or optical components and the ~~heatsink~~ means for interfacing.

28. (Canceled)

29. (Currently Amended) The device of claim 22, wherein the electrical and optical components for receiving data are positioned on one section of the ~~circuit board~~ means for mounting, and the electrical and optical components for transmitting data are positioned on another section of the ~~circuit board~~ means for mounting.

30. **(Currently Amended)** The device of claim 22, wherein the electrical and optical components that are sensitive to temperature variation are positioned near the portion of the ~~circuit board~~ means for mounting that receives the greatest amount of cooling.

31. **(Currently Amended)** An apparatus comprising:
a printed circuit board;
an optical component mounted to the printed circuit board, wherein the optical component is operable to receive a digital data signal;
an electrical component mounted to the printed circuit board, wherein the ~~optical~~ electrical component is operable to receive the digital data signal; and
a heatsink attached to the printed circuit board wherein
the heatsink interfaces directly with the electrical component and the optical component, and
at least one of the electrical component and the optical component is embedded in an opening in the printed circuit board.

32. **(Previously Presented)** The apparatus of claim 31, further comprising a tray mounted on the printed circuit board for routing optical fiber.

33-36 **(Canceled)**

37. **(Currently Amended)** An apparatus comprising: The apparatus of claim 31, wherein
a printed circuit board;
an optical component mounted to the printed circuit board, wherein the optical
component is operable to receive a digital data signal;
an electrical component mounted to the printed circuit board, wherein the optical
electrical component is operable to receive the digital data signal; and
a heatsink attached to the printed circuit board wherein
the heatsink interfaces directly with the electrical component and the
optical component,
the height of the electrical component and the optical component is
substantially the same on one side of the printed circuit board,
the heatsink is attached to the one side of the circuit board, and
the heatsink interfaces with at least the top of the electrical component and
at least the top of the optical component.

38. **(Previously Presented)** The apparatus of claim 31, wherein the heatsink further includes cooling fins.

39. **(Currently Amended)** An apparatus comprising: The apparatus of claim 31, wherein

a printed circuit board;

an optical component mounted to the printed circuit board, wherein the optical component is operable to receive a digital data signal;

an electrical component mounted to the printed circuit board, wherein the optical electrical component is operable to receive the digital data signal; and

a heatsink attached to the printed circuit board wherein

the heatsink interfaces directly with the electrical component and the optical component, and

material is removed from the bottom of one or more portions of the heatsink to accommodate one or more of the electrical or optical components.